

One Hundred Ninth Congress of the United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Tuesday,
the third day of January, two thousand and six*

An Act

To authorize and strengthen the tsunami detection, forecast, warning, and mitigation program of the National Oceanic and Atmospheric Administration, to be carried out by the National Weather Service, and for other purposes.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE.

This Act may be cited as the “Tsunami Warning and Education Act”.

SEC. 2. DEFINITIONS.

In this Act:

(1) The term “Administration” means the National Oceanic and Atmospheric Administration.

(2) The term “Administrator” means the Administrator of the National Oceanic and Atmospheric Administration.

SEC. 3. PURPOSES.

The purposes of this Act are—

(1) to improve tsunami detection, forecasting, warnings, notification, outreach, and mitigation to protect life and property in the United States;

(2) to enhance and modernize the existing Pacific Tsunami Warning System to increase coverage, reduce false alarms, and increase the accuracy of forecasts and warnings, and to expand detection and warning systems to include other vulnerable States and United States territories, including the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico areas;

(3) to improve mapping, modeling, research, and assessment efforts to improve tsunami detection, forecasting, warnings, notification, outreach, mitigation, response, and recovery;

(4) to improve and increase education and outreach activities and ensure that those receiving tsunami warnings and the at-risk public know what to do when a tsunami is approaching;

(5) to provide technical and other assistance to speed international efforts to establish regional tsunami warning systems in vulnerable areas worldwide, including the Indian Ocean; and

(6) to improve Federal, State, and international coordination for detection, warnings, and outreach for tsunami and other coastal impacts.

SEC. 4. TSUNAMI FORECASTING AND WARNING PROGRAM.

(a) **IN GENERAL.**—The Administrator, through the National Weather Service and in consultation with other relevant Administration offices, shall operate a program to provide tsunami detection, forecasting, and warnings for the Pacific and Arctic Ocean regions and for the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico region.

(b) **COMPONENTS.**—The program under this section shall—

(1) include the tsunami warning centers established under subsection (d);

(2) utilize and maintain an array of robust tsunami detection technologies;

(3) maintain detection equipment in operational condition to fulfill the detection, forecasting, and warning requirements of this Act;

(4) provide tsunami forecasting capability based on models and measurements, including tsunami inundation models and maps for use in increasing the preparedness of communities, including through the TsunamiReady program;

(5) maintain data quality and management systems to support the requirements of the program;

(6) include a cooperative effort among the Administration, the United States Geological Survey, and the National Science Foundation under which the Geological Survey and the National Science Foundation shall provide rapid and reliable seismic information to the Administration from international and domestic seismic networks;

(7) provide a capability for the dissemination of warnings to at-risk States and tsunami communities through rapid and reliable notification to government officials and the public, including utilization of and coordination with existing Federal warning systems, including the National Oceanic and Atmospheric Administration Weather Radio All Hazards Program;

(8) allow, as practicable, for integration of tsunami detection technologies with other environmental observing technologies; and

(9) include any technology the Administrator considers appropriate to fulfill the objectives of the program under this section.

(c) **SYSTEM AREAS.**—The program under this section shall operate—

(1) a Pacific tsunami warning system capable of forecasting tsunami anywhere in the Pacific and Arctic Ocean regions and providing adequate warnings; and

(2) an Atlantic Ocean, Caribbean Sea, and Gulf of Mexico tsunami warning system capable of forecasting tsunami and providing adequate warnings in areas of the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico that are determined—

(A) to be geologically active, or to have significant potential for geological activity; and

(B) to pose significant risks of tsunami for States along the coastal areas of the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico.

(d) **TSUNAMI WARNING CENTERS.**—

(1) **IN GENERAL.**—The Administrator, through the National Weather Service, shall maintain or establish—

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- (A) a Pacific Tsunami Warning Center in Hawaii;
- (B) a West Coast and Alaska Tsunami Warning Center in Alaska; and

(C) any additional forecast and warning centers determined by the National Weather Service to be necessary.

(2) RESPONSIBILITIES.—The responsibilities of each tsunami warning center shall include—

(A) continuously monitoring data from seismological, deep ocean, and tidal monitoring stations;

(B) evaluating earthquakes that have the potential to generate tsunami;

(C) evaluating deep ocean buoy data and tidal monitoring stations for indications of tsunami resulting from earthquakes and other sources;

(D) disseminating forecasts and tsunami warning bulletins to Federal, State, and local government officials and the public;

(E) coordinating with the tsunami hazard mitigation program described in section 5 to ensure ongoing sharing of information between forecasters and emergency management officials; and

(F) making data gathered under this Act and post-warning analyses conducted by the National Weather Service or other relevant Administration offices available to researchers.

(e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND UPGRADES.—

(1) IN GENERAL.—In carrying out this section, the National Weather Service, in consultation with other relevant Administration offices, shall—

(A) develop requirements for the equipment used to forecast tsunami, which shall include provisions for multipurpose detection platforms, reliability and performance metrics, and to the maximum extent practicable how the equipment will be integrated with other United States and global ocean and coastal observation systems, the global earth observing system of systems, global seismic networks, and the Advanced National Seismic System;

(B) develop and execute a plan for the transfer of technology from ongoing research described in section 6 into the program under this section; and

(C) ensure that maintaining operational tsunami detection equipment is the highest priority within the program carried out under this Act.

(2) REPORT TO CONGRESS.—

(A) Not later than 1 year after the date of enactment of this Act, the National Weather Service, in consultation with other relevant Administration offices, shall transmit to Congress a report on how the tsunami forecast system under this section will be integrated with other United States and global ocean and coastal observation systems, the global earth observing system of systems, global seismic networks, and the Advanced National Seismic System.

(B) Not later than 3 years after the date of enactment of this Act, the National Weather Service, in consultation with other relevant Administration offices, shall transmit a report to Congress on how technology developed under

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section 6 is being transferred into the program under this section.

(f) **FEDERAL COOPERATION.**—When deploying and maintaining tsunami detection technologies, the Administrator shall seek the assistance and assets of other appropriate Federal agencies.

(g) **ANNUAL EQUIPMENT CERTIFICATION.**—At the same time Congress receives the budget justification documents in support of the President's annual budget request for each fiscal year, the Administrator shall transmit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives a certification that—

(1) identifies the tsunami detection equipment deployed pursuant to this Act, as of December 31 of the preceding calendar year;

(2) certifies which equipment is operational as of December 31 of the preceding calendar year;

(3) in the case of any piece of such equipment that is not operational as of such date, identifies that equipment and describes the mitigation strategy that is in place—

(A) to repair or replace that piece of equipment within a reasonable period of time; or

(B) to otherwise ensure adequate tsunami detection coverage;

(4) identifies any equipment that is being developed or constructed to carry out this Act but which has not yet been deployed, if the Administration has entered into a contract for that equipment prior to December 31 of the preceding calendar year, and provides a schedule for the deployment of that equipment; and

(5) certifies that the Administrator expects the equipment described in paragraph (4) to meet the requirements, cost, and schedule provided in that contract.

(h) **CONGRESSIONAL NOTIFICATIONS.**—The Administrator shall notify the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives within 30 days of—

(1) impaired regional forecasting capabilities due to equipment or system failures; and

(2) significant contractor failures or delays in completing work associated with the tsunami forecasting and warning system.

(i) **REPORT.**—Not later than January 31, 2010, the Comptroller General of the United States shall transmit a report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives that—

(1) evaluates the current status of the tsunami detection, forecasting, and warning system and the tsunami hazard mitigation program established under this Act, including progress toward tsunami inundation mapping of all coastal areas vulnerable to tsunami and whether there has been any degradation of services as a result of the expansion of the program;

(2) evaluates the National Weather Service's ability to achieve continued improvements in the delivery of tsunami detection, forecasting, and warning services by assessing policies and plans for the evolution of modernization systems,

models, and computational abilities (including the adoption of new technologies); and

(3) lists the contributions of funding or other resources to the program by other Federal agencies, particularly agencies participating in the program.

(j) **EXTERNAL REVIEW.**—The Administrator shall enter into an arrangement with the National Academy of Sciences to review the tsunami detection, forecast, and warning program established under this Act to assess further modernization and coverage needs, as well as long-term operational reliability issues, taking into account measures implemented under this Act. The review shall also include an assessment of how well the forecast equipment has been integrated into other United States and global ocean and coastal observation systems and the global earth observing system of systems. Not later than 2 years after the date of enactment of this Act, the Administrator shall transmit a report containing the National Academy of Sciences' recommendations, the Administrator's responses to the recommendations, including those where the Administrator disagrees with the Academy, a timetable to implement the accepted recommendations, and the cost of implementing all the Academy's recommendations, to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives.

(k) **REPORT.**—Not later than 3 months after the date of enactment of this Act, the Administrator shall establish a process for monitoring and certifying contractor performance in carrying out the requirements of any contract to construct or deploy tsunami detection equipment, including procedures and penalties to be imposed in cases of significant contractor failure or negligence.

SEC. 5. NATIONAL TSUNAMI HAZARD MITIGATION PROGRAM.

(a) **IN GENERAL.**—The Administrator, through the National Weather Service and in consultation with other relevant Administration offices, shall conduct a community-based tsunami hazard mitigation program to improve tsunami preparedness of at-risk areas in the United States and its territories.

(b) **COORDINATING COMMITTEE.**—In conducting the program under this section, the Administrator shall establish a coordinating committee comprising representatives of Federal, State, local, and tribal government officials. The Administrator may establish subcommittees to address region-specific issues. The committee shall—

(1) recommend how funds appropriated for carrying out the program under this section will be allocated;

(2) ensure that areas described in section 4(c) in the United States and its territories can have the opportunity to participate in the program;

(3) provide recommendations to the National Weather Service on how to improve the TsunamiReady program, particularly on ways to make communities more tsunami resilient through the use of inundation maps and other mitigation practices; and

(4) ensure that all components of the program are integrated with ongoing hazard warning and risk management activities, emergency response plans, and mitigation programs in affected areas, including integrating information to assist in tsunami evacuation route planning.

(c) PROGRAM COMPONENTS.—The program under this section shall—

(1) use inundation models that meet a standard of accuracy defined by the Administration to improve the quality and extent of inundation mapping, including assessment of vulnerable inner coastal and nearshore areas, in a coordinated and standardized fashion to maximize resources and the utility of data collected;

(2) promote and improve community outreach and education networks and programs to ensure community readiness, including the development of comprehensive coastal risk and vulnerability assessment training and decision support tools, implementation of technical training and public education programs, and providing for certification of prepared communities;

(3) integrate tsunami preparedness and mitigation programs into ongoing hazard warning and risk management activities, emergency response plans, and mitigation programs in affected areas, including integrating information to assist in tsunami evacuation route planning;

(4) promote the adoption of tsunami warning and mitigation measures by Federal, State, tribal, and local governments and nongovernmental entities, including educational programs to discourage development in high-risk areas; and

(5) provide for periodic external review of the program.

(d) SAVINGS CLAUSE.—Nothing in this section shall be construed to require a change in the chair of any existing tsunami hazard mitigation program subcommittee.

SEC. 6. TSUNAMI RESEARCH PROGRAM.

The Administrator shall, in consultation with other agencies and academic institutions, and with the coordinating committee established under section 5(b), establish or maintain a tsunami research program to develop detection, forecast, communication, and mitigation science and technology, including advanced sensing techniques, information and communication technology, data collection, analysis, and assessment for tsunami tracking and numerical forecast modeling. Such research program shall—

(1) consider other appropriate research to mitigate the impact of tsunami;

(2) coordinate with the National Weather Service on technology to be transferred to operations;

(3) include social science research to develop and assess community warning, education, and evacuation materials; and

(4) ensure that research and findings are available to the scientific community.

SEC. 7. GLOBAL TSUNAMI WARNING AND MITIGATION NETWORK.

(a) INTERNATIONAL TSUNAMI WARNING SYSTEM.—The Administrator, through the National Weather Service and in consultation with other relevant Administration offices, in coordination with other members of the United States Interagency Committee of the National Tsunami Hazard Mitigation Program, shall provide technical assistance and training to the Intergovernmental Oceanographic Commission, the World Meteorological Organization, and other international entities, as part of international efforts to develop a fully functional global tsunami forecast and warning system comprising regional tsunami warning networks, modeled on the International Tsunami Warning System of the Pacific.

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(b) **INTERNATIONAL TSUNAMI INFORMATION CENTER.**—The Administrator, through the National Weather Service and in consultation with other relevant Administration offices, in cooperation with the Intergovernmental Oceanographic Commission, shall operate an International Tsunami Information Center to improve tsunami preparedness for all Pacific Ocean nations participating in the International Tsunami Warning System of the Pacific, and may also provide such assistance to other nations participating in a global tsunami warning system established through the Intergovernmental Oceanographic Commission. As part of its responsibilities around the world, the Center shall—

(1) monitor international tsunami warning activities around the world;

(2) assist member states in establishing national warning systems, and make information available on current technologies for tsunami warning systems;

(3) maintain a library of materials to promulgate knowledge about tsunami in general and for use by the scientific community; and

(4) disseminate information, including educational materials and research reports.

(c) **DETECTION EQUIPMENT; TECHNICAL ADVICE AND TRAINING.**—In carrying out this section, the National Weather Service—

(1) shall give priority to assisting nations in identifying vulnerable coastal areas, creating inundation maps, obtaining or designing real-time detection and reporting equipment, and establishing communication and warning networks and contact points in each vulnerable nation;

(2) may establish a process for transfer of detection and communication technology to affected nations for the purposes of establishing the international tsunami warning system; and

(3) shall provide technical and other assistance to support international tsunami programs.

(d) **DATA-SHARING REQUIREMENT.**—The National Weather Service, when deciding to provide assistance under this section, may take into consideration the data sharing policies and practices of nations proposed to receive such assistance, with a goal to encourage all nations to support full and open exchange of data.

SEC. 8. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Administrator to carry out this Act—

(1) \$25,000,000 for fiscal year 2008, of which—

(A) not less than 27 percent of the amount appropriated shall be for the tsunami hazard mitigation program under section 5; and

(B) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 6;

(2) \$26,000,000 for fiscal year 2009, of which—

(A) not less than 27 percent of the amount appropriated shall be for the tsunami hazard mitigation program under section 5; and

(B) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 6;

(3) \$27,000,000 for fiscal year 2010, of which—

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(A) not less than 27 percent of the amount appropriated shall be for the tsunami hazard mitigation program under section 5; and

(B) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 6;

(4) \$28,000,000 for fiscal year 2011, of which—

(A) not less than 27 percent of the amount appropriated shall be for the tsunami hazard mitigation program under section 5; and

(B) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 6; and

(5) \$29,000,000 for fiscal year 2012, of which—

(A) not less than 27 percent of the amount appropriated shall be for the tsunami hazard mitigation program under section 5; and

(B) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 6.

Speaker of the House of Representatives.

*Vice President of the United States and
President of the Senate.*